

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson (US 2945386) in view of Roth et al (US 4965864).

As for claim 1, Peterson teaches (in Figs. 2 and 3) a vibration generator (1) comprising a housing (2), a weight (6) movable relative to the housing (1) for operatively imparting a vibratory movement to the housing (1), and means for imparting movement

(10) to the weight for causing said vibratory movement of the housing, wherein the weight (6) is a magnetic element (col. 4, line 30-33) that is freely movable along a track (32) within the housing (1).

Peterson, however, failed to teach or suggest wherein a plurality of electric coils are associated with the track for operative sequential energisation to create movement of the magnetic element within the track to impart a vibratory movement to the vibration generator. In the same field of endeavor, Roth teaches (in Fig. 6) a plurality of electric coils (40) are associated with the track (46) for operative sequential energisation to create movement of the magnetic element (43) within the track (46) to impart a movement to the linear motor. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Roth with that of Peterson for compact system using linear motor principle.

As for claim 2, Peterson and Roth teach the claimed invention as applied to claim 1 above. Peterson further teaches (in Figs. 2 and 3) the track (32) is an endless track that follows a path selected from a circular and an elliptical path.

As for claim 3, Peterson and Roth teach the claimed invention as applied to claim 1 above. Roth further teaches (in Fig. 6) the coils (40) are generally equally spaced along the track (46).

As for claim 4, Peterson and Roth teach the claimed invention as applied to claim 1 above. Roth further teaches (in Fig. 6) the coils (40) are wound around the housing (41) concentrically with the track (46) therein at spaced positions along the track.

As for claim 5, Peterson and Roth teach the claimed invention as applied to claim 1 above. Peterson further implicitly teaches (in Figs. 2 and 3) the track (32) has a surface layer (5) operatively engaged by the magnetic element (6), wherein said surface layer (5) has qualities that of sound absorption. (col. 4, line 42-47; as to eliminate all frictional interference)

As for claim 6, Peterson and Roth teach the claimed invention as applied to claim 1 above. Peterson further teaches (in Figs. 2 and 3) the magnetic element (6) is spherical in shape (ball; col. 4, line 42) but failed to teach the track is of generally circular shape in cross-section. However, Roth further teaches (in Fig. 6) the track (46) is of generally circular shape in cross-section. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Roth with that of Peterson for higher efficiency by reducing gap between coil and magnetic ball.

As for claim 7, Peterson and Roth teach the claimed invention as applied to claim 1 above. Roth further teaches (in Fig. 4) the housing (the part encapsulating the coils) and coils are encased within an outer shell (23) formed to permanently enclose the housing and coils.

As for claim 8, Peterson and Roth teach the claimed invention as applied to claim 1 above. Roth further teaches (in Figs. 4 and 6) the housing (41) is sealed in a closed condition (as encapsulated) following evacuation of air and optional purging with a suitable gas.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson (US 2945386) in view of Roth et al et al (US 4965864) as modified in claim 2 above, and in further view of Kobayashi et al (US 2004/0066097) and Prince (US 3765407).

Peterson and Roth teach the claimed invention as applied to claim 2 above. The references, however, failed to teach an auxiliary vibration generator having a reciprocally movable weight therein is located in the centre of the vibration generator with the axis of movement of the reciprocally movable weight being at generally right angles to the plane of the track to thereby generate vibrations in two transverse directions.

In the same field of endeavor, Kobayashi teaches (in Fig. 1) a vibration generator having a reciprocally movable weight (60) therein is located in the centre of the vibration generator. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine teaching of Kobayashi with those of Peterson and Roth for compact size vibrator. The references, however, failed to teach the axis of movement of the reciprocally movable weight being at generally right angles to the plane of the track to thereby generate vibrations in two transverse directions. In the same field of endeavor, Prince teaches (in Fig. 2) the axis of movement of the reciprocally movable weight (armature 15 of motor 14) being at generally right angles to the plane of the track to thereby generate vibration (armature 18 of motor 17) in two transverse directions.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine teaching of Prince with those of Kobayashi, Peterson and Roth for compact size built-in multi vibrator.

5. Claim 9 is alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson (US 2945386) in view of Roth et al et al (US 4965864) as modified in claim 2 above, and in further view of Kobayashi et al (US 2004/0066097) and Kowalski et al (US 6211591).

Peterson and Roth teach the claimed invention as applied to claim 2 above. The references, however, failed to teach an auxiliary vibration generator having a reciprocally movable weight therein is located in the centre of the vibration generator with the axis of movement of the reciprocally movable weight being at generally right angles to the plane of the track to thereby generate vibrations in two transverse directions.

In the same field of endeavor, Kobayashi teaches (in Fig. 1) a vibration generator having a reciprocally movable weight (60) therein is located in the centre of the vibration generator. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine teaching of Kobayashi with those of Peterson and Roth for compact size vibrator. The references, however, failed to teach the axis of movement of the reciprocally movable weight being at generally right angles to the plane of the track to thereby generate vibrations in two transverse directions. In

the same field of endeavor, Kowalski teaches (in Fig. 1) the axis of movement of the reciprocally movable weight (28) being at generally right angles to the plane of the track to thereby generate vibration (trajectory of stepper rotor 24; stepper typically generates vibration) in two transverse directions.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine teaching of Prince with those of Kobayashi, Peterson and Roth for compact size built-in multi vibrator.

6. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson (US 2945386) in view of Roth et al (US 4965864) as modified in claim 1 above, and in further view of Bhadra (US 4728837).

As for claim 10, Peterson and Roth teach the claimed invention as applied to claim 1 above. Peterson and Roth, however, failed to teach a second vibration generator is located coaxially therewith. In the same field of endeavor, Bhadra discloses the claimed invention (in Fig. 2) except for a second vibration generator (one of two generators) is located coaxially therewith. It would have been obvious to one having ordinary skill in the art at the time the invention was made to locate the second one inside the first one to save the space, since it has been held that rearranging parts of an invention involved only routine skill in the art. *In re Japikse*, 86 USPQ 70 (CCPA 1950).

As for claim 11, Peterson, Roth and Bhadra teach the claimed invention as applied to claim 10 above. The references, however, failed to teach the vibration generators are of different diameters with a smaller one being received within a larger one in substantially coplanar relationship. However, it is notoriously old and well known in the art to have the different diameters when two circles are arranged coaxially, and therefore the examiner hereby takes official notice regarding the smaller diameter for the second vibrator located in inner circle. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for compact two rings vibrator.

7. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson (US 2945386) in view of Roth et al et al (US 4965864) as modified in claim 1 above, and in further view of Jain (US 5713832).

As for claim 12, Peterson and Roth teach the claimed invention as applied to claim 1 above. The references, however, failed to teach the vibration generators are connected to a common control unit that operatively controls the operation of the electric coils associated with the tracks of the vibration generators and wherein the control unit is configured to cause the vibration generators to create interference waves consequent on interaction of the individual vibrations created by each vibration generator.

In the same field of endeavor, Jain teaches (in Figs. 1 and 11) the vibration generators (14) are connected to a common control unit (16) that operatively controls the operation of the electric coils (inside 24) associated with the tracks (28) of the vibration generators (14) and wherein the control unit (16) is configured to cause the vibration generators (14) to create interference waves consequent on interaction of the individual vibrations created by each vibration generator (14). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Jain with those of Peterson and Roth for cost reduction and compact system by using one controller.

As for claim 13, Peterson and Roth teach the claimed invention as applied to claim 11 above. The references, however, failed to teach the composite units are connected to a common control unit that controls the operation of the electric coils associated with the tracks of the various vibration generators and wherein the control unit is configured to cause the vibration generators to create interference waves consequent on the interaction of the individual vibrations created by each vibration generator.

In the same field of endeavor, Jain teaches Jain discloses the claimed invention as described in claim 12 above except for the composite units are connected to a common control unit. However, it would not be an issue for control unit whether each vibrator is a composite unit or not. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of

Jain with those of Peterson and Roth for cost reduction and compact system by using one controller.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN K. KIM whose telephone number is (571)270-5072. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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